



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/056,609	01/24/2002	Ronald L. Pettyjohn	FORE-609	9506
7590	09/18/2007			
Ansel M. Schwartz Attorney at Law Suite 304 201 N. Craig Street Pittsburgh, PA 15222			EXAMINER WALSH, JOHN B	
			ART UNIT 2151	PAPER NUMBER
			MAIL DATE 09/18/2007	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)
	10/056,609	PETTYJOHN ET AL.
Examiner	Art Unit	
John B. Walsh	2151	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on RCE of 8/9/07.
- 2a) This action is FINAL. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 9-20 is/are pending in the application.
 - 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) Claim(s) _____ is/are allowed.
- 6) Claim(s) 9-20 is/are rejected.
- 7) Claim(s) _____ is/are objected to.
- 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on _____ is/are: a) accepted or b) objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) Notice of References Cited (PTO-892)
- 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) Notice of Informal Patent Application
- 6) Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 9-20 are rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Patent No. 6,081,507 to Chao et al.

As concerns claim 9, a method of scheduling the transmission of at least one data unit from a node on a communications network, the network node including at least one input port communicably coupleable to at least one output port, comprising the steps of: providing a first memory (1600) at each output port (column 8, line 21) of the network node, the first memory comprising at least two linear time-indexed array (column 18, lines 10-11) having a plurality of locations, at least one of the two linear time-indexed arrays for buffering the at least one data unit (column 18, lines 15-16; column 16, line 16); receiving at least one first data unit at the network node, the at least one first data unit having an associated timestamp value (column 16, line 16); inserting the first data unit into a respective location of the time-based array based on the associated timestamp value (column 18, line 16); indicating with a variable there is a valid data unit in the respective location (column 17, line 1-validity bit); partitioning a binary value of the timestamp associated with the first data unit into a plurality of sub-fields, each sub-field comprising one or more bits, and using the plurality of sub-fields to generate a corresponding

plurality of acceleration bit-strings for use in identifying the first data unit in the time-based array having a lowest associated timestamp value (figures 19A, 19B, 20A, 20B); extracting the identified first data unit having the lowest associated timestamp value from the time-based array (figures 19A, 19B, 20A, 20B); and designating the extracted first data unit as a next data unit to be transmitted over the network (figure 28; 2840).

As concerns claim 10, the method of claim 9 wherein the network node includes at least one second memory (1600; a second memory location or address) and the partitioning step includes using the sub-fields of bits to index respective locations in the at least one second memory and asserting values at the respective memory locations to generate the plurality of acceleration bit-strings.

As concerns claim 11, the method of claim 10 further including the step of priority encoding each acceleration bit-string to obtain a corresponding priority-encoded acceleration bit-string (figures 19A, 19B, 20A, 20B; column 17, lines 15-35).

As concerns claim 12, the method of claim 11 wherein the priority encoding step employs "low-wins" priority encoding (column 15, line 25).

As concerns claim 13, the method of claim 11 further including the step of employing one or more of the priority-encoded acceleration bit-strings to index the time-based array to identify the first data unit in the array having the lowest associated timestamp value (figures 19A, 19B, 20A, 20B; column 17, lines 15-35; column 18, lines 15-16).

As concerns claim 14, the method of claim 9 wherein each location of the time-based array corresponds to a respective timestamp value within a first time window ranging from t=0 to t=Tw, and further including the step of in the event the timestamp value associated with the

next data unit to be transmitted over the network is greater than or equal to $Tw/2$, shifting the first time window forward in time by $Tw/2$ to obtain a next time window ranging from $t=Tw/2$ to $t=3Tw/2$ (column 15, lines 24-25; figures 34a, 34b).

As concerns claim 15, the method of claim 14 wherein the receiving step includes receiving at least one first data unit at the network node, the at least one first data unit having an associated timestamp value within a range limited to $Tw/2$ (column 15, lines 24-25; figures 34a, 34b).

As concerns claim 16, a system for scheduling the transmission of at least one data unit from a node on a communications network, the node including at least one input port and at least one output port, the input port being communicably coupleable to the output port, comprising: a first memory (1600) disposed at each output port of the network node, the first memory comprising at least two linear time-indexed array (column 18, lines 10-11) having a plurality of locations, at least one of the two linear time-indexed arrays configured to buffer at least one first data unit, each first data unit having an associated timestamp value (column 18, line 16); and a controller configured to insert the at least one first data unit into a respective location of the time-indexed array based on the associated timestamp value, partition a binary value of the timestamp associated with the first data unit into a plurality of sub-fields, each sub-field comprising one or more bits, use the plurality of sub-fields to generate a corresponding plurality of acceleration bit-strings for use in identifying the first data unit in the time-based array having a lowest associated timestamp value, extract the identified first data unit having the lowest associated timestamp value from the time-based array, indicating with a variable there is a valid data unit in the respective location (column 17, line 1-validity bit; column 18, lines 16-).

20); and designate the extracted first data unit as a next data unit to be transmitted over the network (figures 19A, 19B, 20A, 20B; figure 28; 2840).

As concerns claim 17, the system of claim 16 wherein each location of the time-based array corresponds to a respective timestamp value within a first time window ranging from $t=0$ to $t=Tw$, and the controller is further configured to, in the event the timestamp value associated with the next data unit to be transmitted over the network is greater than or equal to $Tw/2$, shift the first time window forward in time by $Tw/2$ to obtain a next time window ranging from $t=Tw/2$ to $t=3Tw/2$ (column 15, lines 24-25; figures 34a, 34b).

As concerns claim 18, the system of claim 16 wherein the network node has a predetermined total bandwidth and the time-based array has a size sufficient to support the total bandwidth of the node (over time it can support the total bandwidth).

As concerns claim 19, the system of claim 16 wherein the first memory comprises a plurality of linear time-indexed arrays, each array corresponding to a respective channel in the network (column 13, lines 18-19).

As concerns claim 20, the system of claim 19 wherein each array has a size proportional to a fractional amount of a predetermined total bandwidth of the network node (inherent that the amount of data stored is proportional to the bandwidth).

Response to Arguments

3. Applicant's arguments filed August 9, 2007 have been fully considered but they are not persuasive.

The applicant argues Chao does not disclose at least two linear time-indexed arrays. The examiner disagrees since Chao discloses this limitation at least at column 18, lines 10-11 – wherein there is a two-dimensional queue and at column 18, lines 15-16- wherein the data is sorted by time-stamp, thus being “time indexed”.

The applicant argues Chao does not disclose indicating with a variable there is a valid data unit in the respective location. The examiner disagrees since Chao at least at column 18, lines 16-20 – discloses if the bit is set to a certain value, thus it is variable, there is valid data present.

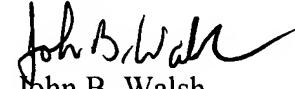
Conclusion

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to John B. Walsh whose telephone number is 571-272-7063. The examiner can normally be reached on Monday-Thursday from 7:00-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Valencia Martin-Wallace can be reached on 571-272-3440. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would

Art Unit: 2151

like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.


John B. Walsh
Primary Examiner
Art Unit 2151